

Practices for Resilient Distribution Systems

Tom Short, EPRI, tshort@epri.com

<http://distribution.epri.com>

Resilience Training for the Southeast
Public Service Commission of South Carolina

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Hurricane Matthew









Resilient

Hardened, quickly restorable, decreased risk

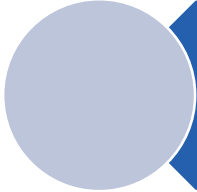
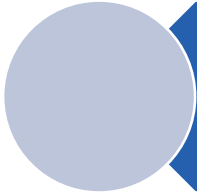
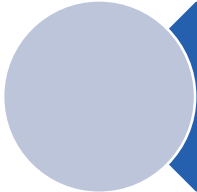
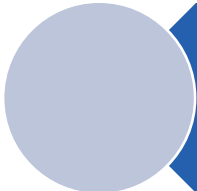
Stronger storms will test the strength of overhead structures...





Resilient Designs

Hardening: What do you want to break?

-  Pole
-  Wire
-  Crossarm
-  Insulator







Resilient Crossarm Construction



Resilient Crossarm Construction



Stronger poles

Maybe concrete, steel, or fiberglass

“Loose” conductor attachments

New designs

Resilient Crossarm Construction

Branch Capture of Different Designs



Undergrounding



U-DIG
UNDERGROUNDING
DISTRIBUTION INTEREST GROUP



GDO
GRID DEPLOYMENT OFFICE

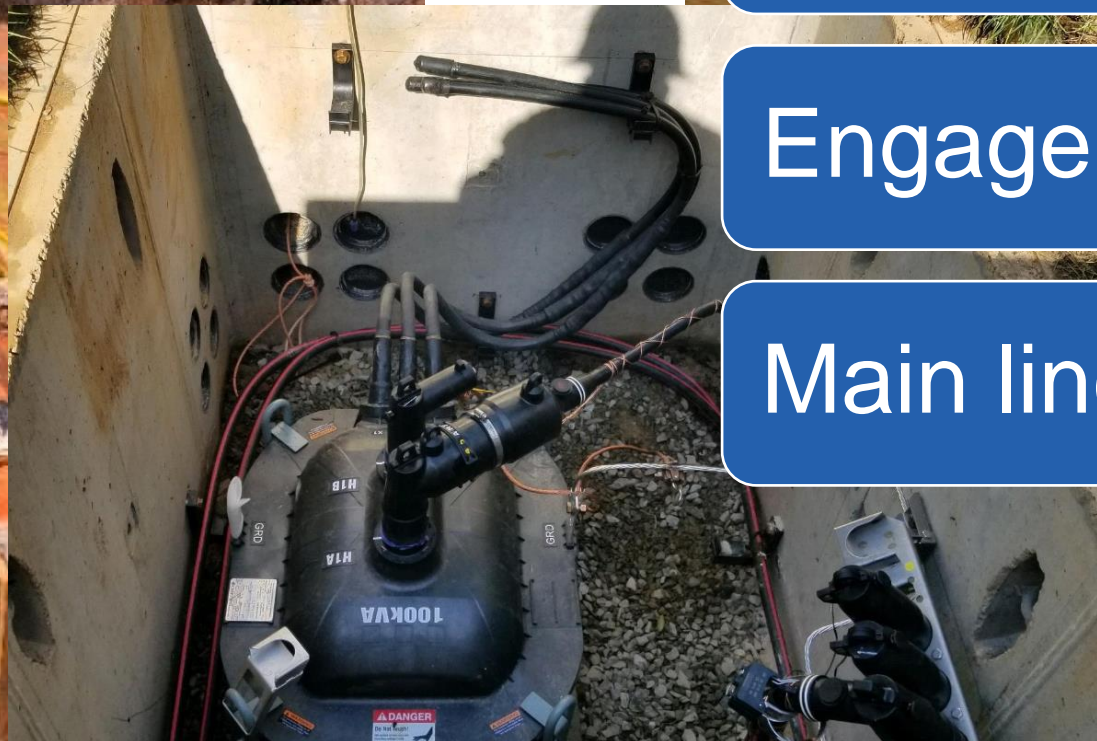
Undergrounding

Effective

No silver bullets

Engagement is key

Main lines or taps?





Maintenance

Vegetation Management

Before ROW Clearing



After ROW Clearing



Source: <https://priceelectric.coop/vegetation-management>

Vegetation Management

Before ROW Clearing



After ROW Clearing



Source: <https://priceelectric.coop/vegetation-management>

Ground-to-sky clearing

Hazard-tree programs

Targeted maintenance



New Capabilities

Distribution Control Centers



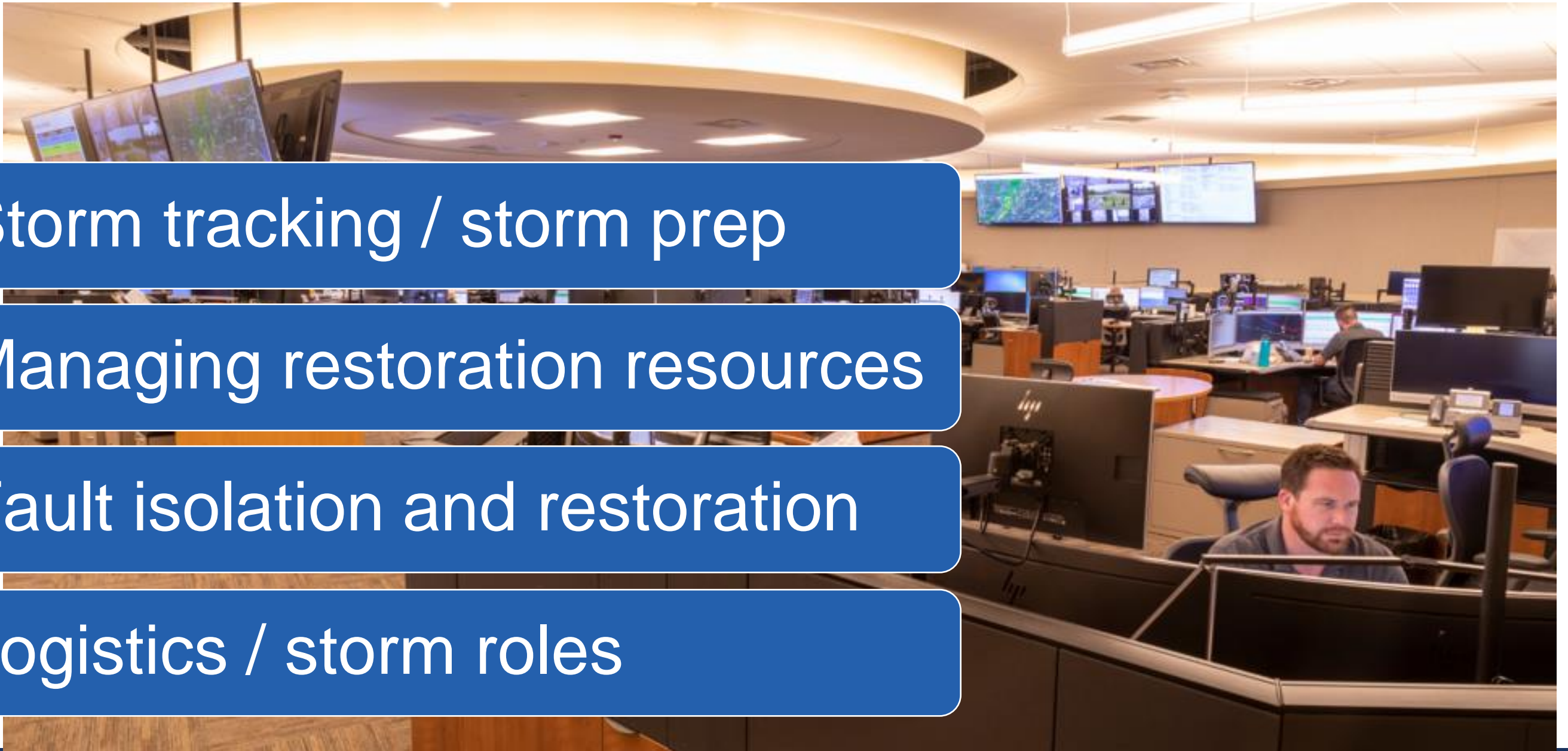
Distribution Control Centers

Storm tracking / storm prep

Managing restoration resources

Fault isolation and restoration

Logistics / storm roles



Distribution Automation



Distribution Automation



Smaller sections

“Meshed”

Communications

Automatic restoration

Using Smart Meters (AMI)



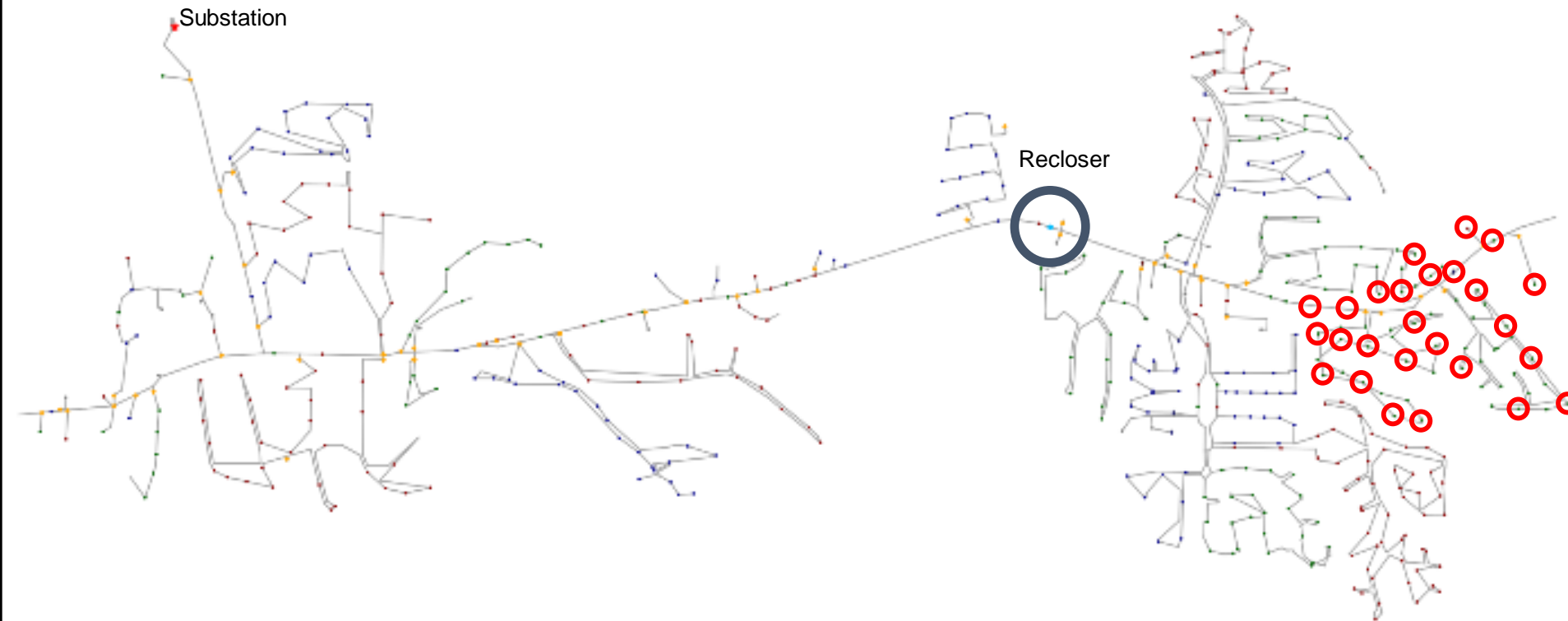
Using Smart Meters (AMI)

Notify on outages

Notify on restore

Pockets of problems

Downed-wire hazards





Emerging Issues

Solar Energy

Keeping the PV on



Electrification



Electrification



More dependance

versus

Storage

Electrification



Managed charging

Vehicle to grid

Resilient charging



Questions / Discussion